GIS Outputs and the Data User: Closing the Loop

Llewellyn R. Williams, ORD - *Presenter*

Introduction

Users/stakeholders -- want information in a variety of forms to meet their specific needs

New technology -- is capable of an elaboration of improved and integrated output types

Output type -- links to purpose and audience

Effective output -- conveys what it means, to what it applies and the uncertainties involved

Output Types

- Tables
- Charts
- Graphs
- Spatial images
  - Maps
  - Photos, photo enhancements, overlays
  - Panchromatic, multi-spectral images
- Models

Output Devices

Raster vs. Vector, Analog vs. Digital

Video

- CRT, graphical monitors, projectors

Printers

- Electronic typewriters, dot matrix, laser, inkjet, dye sublimation, etc.

Plotters (2-D, 3-D, D^n)

Electronic data transfer -- to users, databases, other storage/retrieval devices, websites

GIS Software

Allows user to:

- display spatial and tabular data as maps, tables and charts
- visualize information in ways that reveal new relationships, patterns, trends not visible with text files, spreadsheets and databases
- perform spatial analyses

GIS Outputs

- **Integration -- makes possible a unified presentation of multiple data sources**
- **Simplification -- or over-simplification?**
- **Impact -- getting data the attention they deserve!**
  I saw it; therefore I believe it!
  Today's youth = visual learning
- **Perception -- persuasion? potential for manipulation?**
- **Interpretation -- easily misinterpreted, overinterpreted**

Graphical Output Packages

Interface GIS outputs, presentation devices --

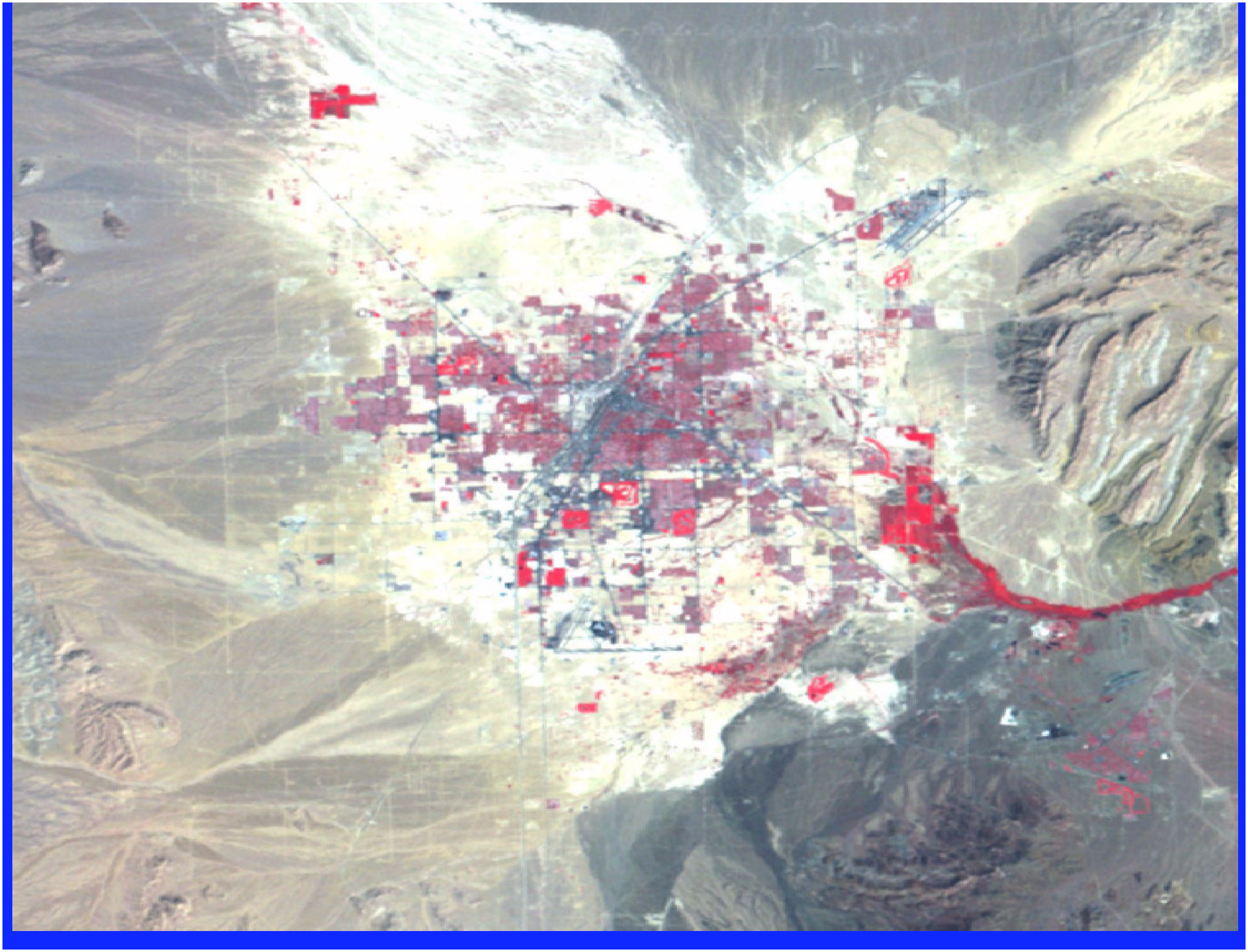
Add impact, polish, options, special effects

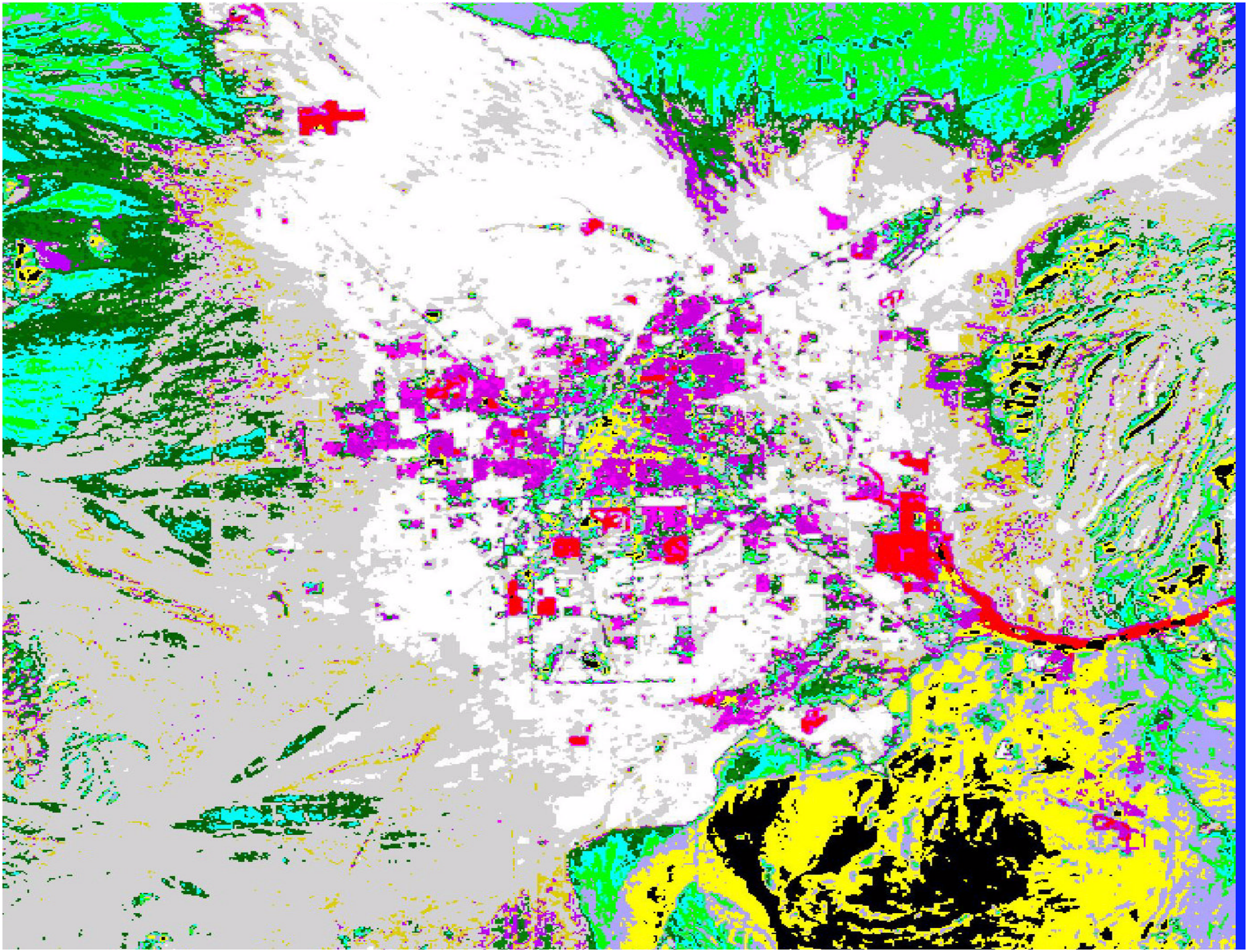
Optimize visual presentations --

Zoom, draw-over, highlighter, moveable arrow, sequential lay-ins, superimpositions, fades, transitions across time or space, toggles

Optimize maps, plots, charts, graphs --

Compression algorithms and information loss: ArcView to PhotoShop, ArcView to PowerPoint





Fundamental Issues

Output = *f*(Audience + Purpose)

Given the above, is the output type selected appropriate?

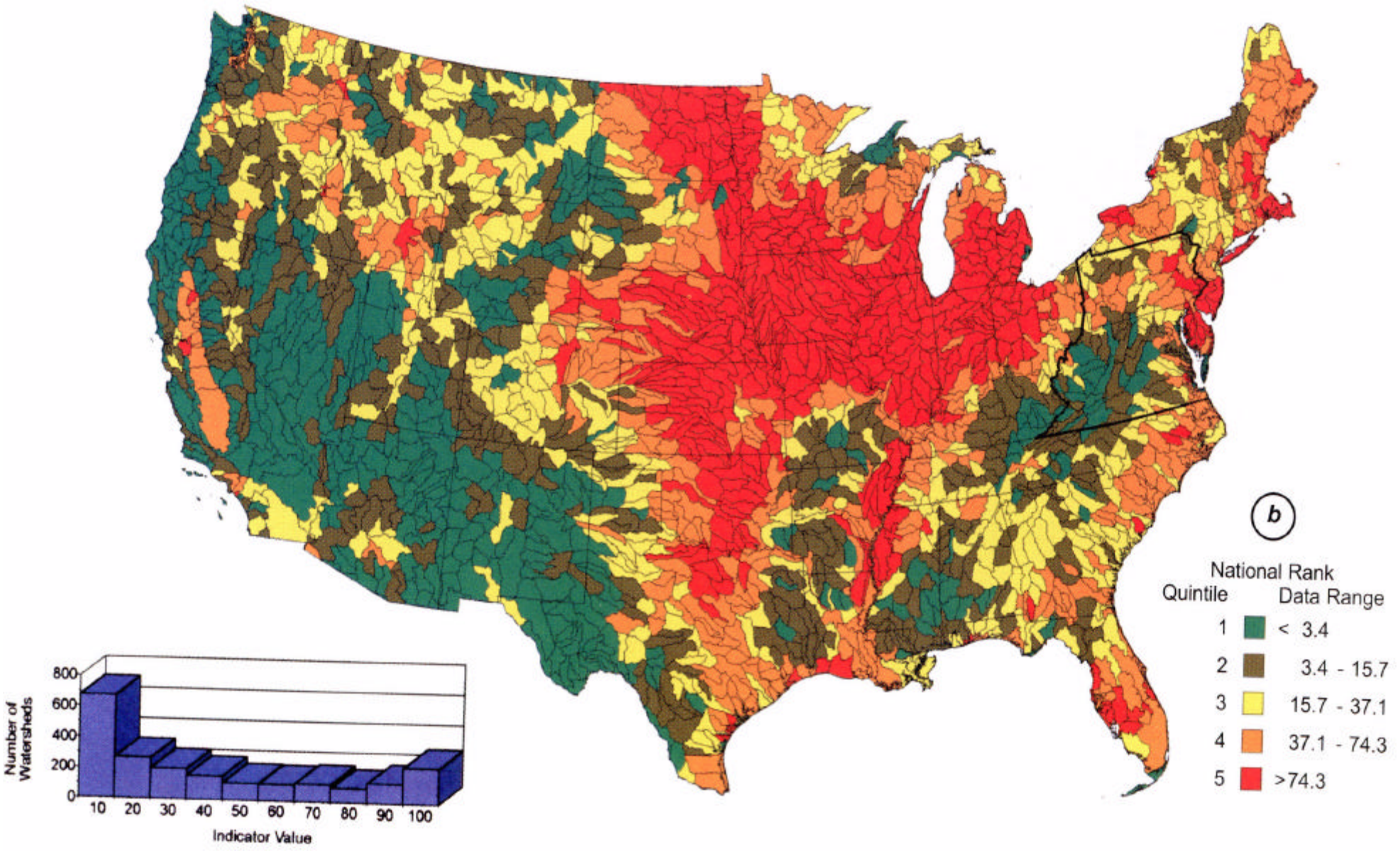
- **What types were considered?**
- **Who selected it?**
- **Was the primary user involved?**

Selection of output type --

- **How does it affect the story the data producer is trying to tell?**
- **What can the user do with the product?**

Interconvertability --

- **A key to output flexibility**


b
National Rank
Quintile
Data Range
1 < 3.4
2 3.4 - 15.7
3 15.7 - 37.1
4 37.1 - 74.3
5 >74.3
Number of Watersheds
800
600
400
200
0
10 20 30 40 50 60 70 80 90 100
Indicator Value

Fundamental Issues (continued)

What does the output mean?

- **What are the limitations/ assumptions associated with the data or the models and algorithms generating those data?**
- **What are the major risks of ignoring those limitations/ assumptions?**

What does the output NOT mean? (Even though it really looks like it does!)

- **Are the data being used in a manner consistent with the purpose for which they were gathered?**

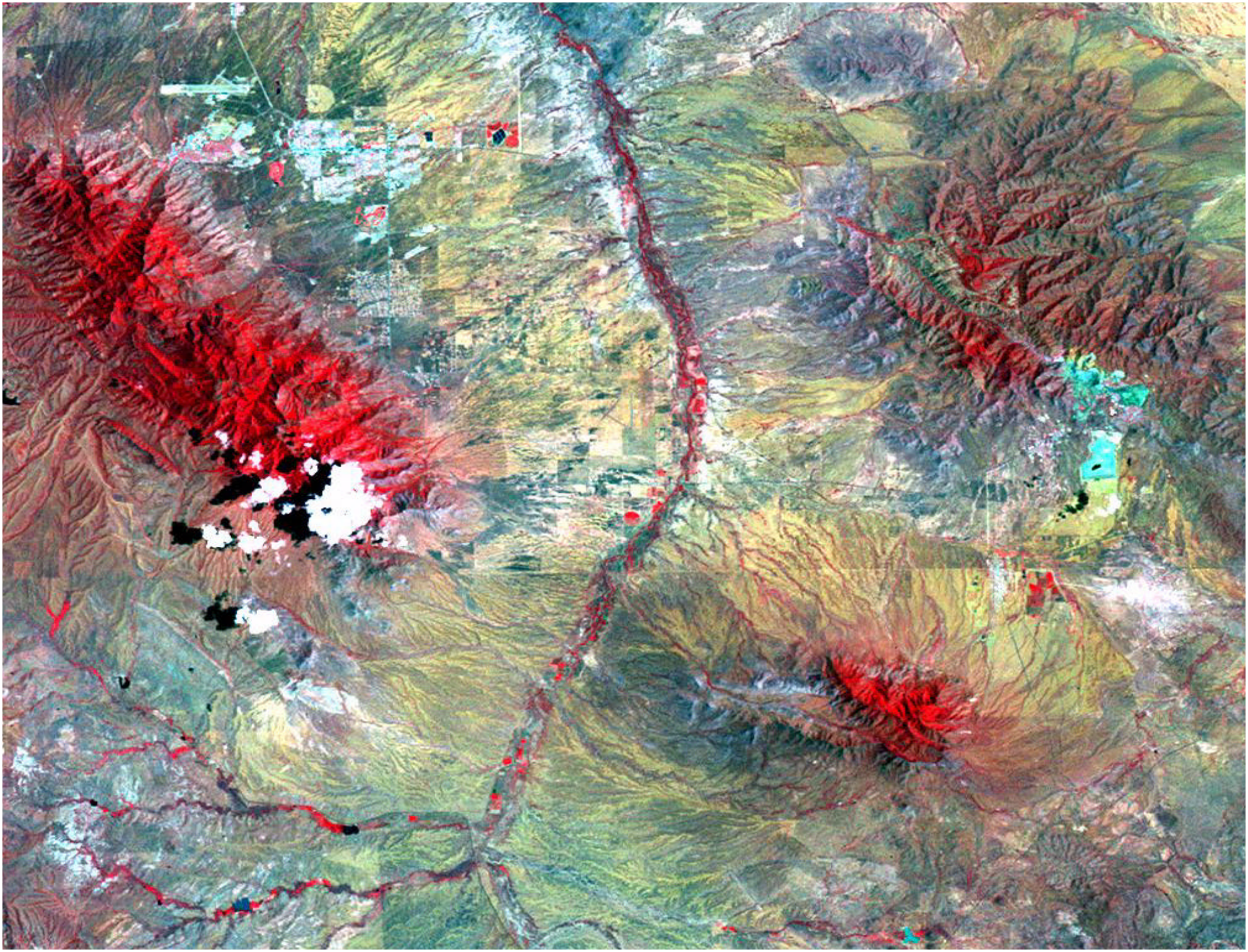
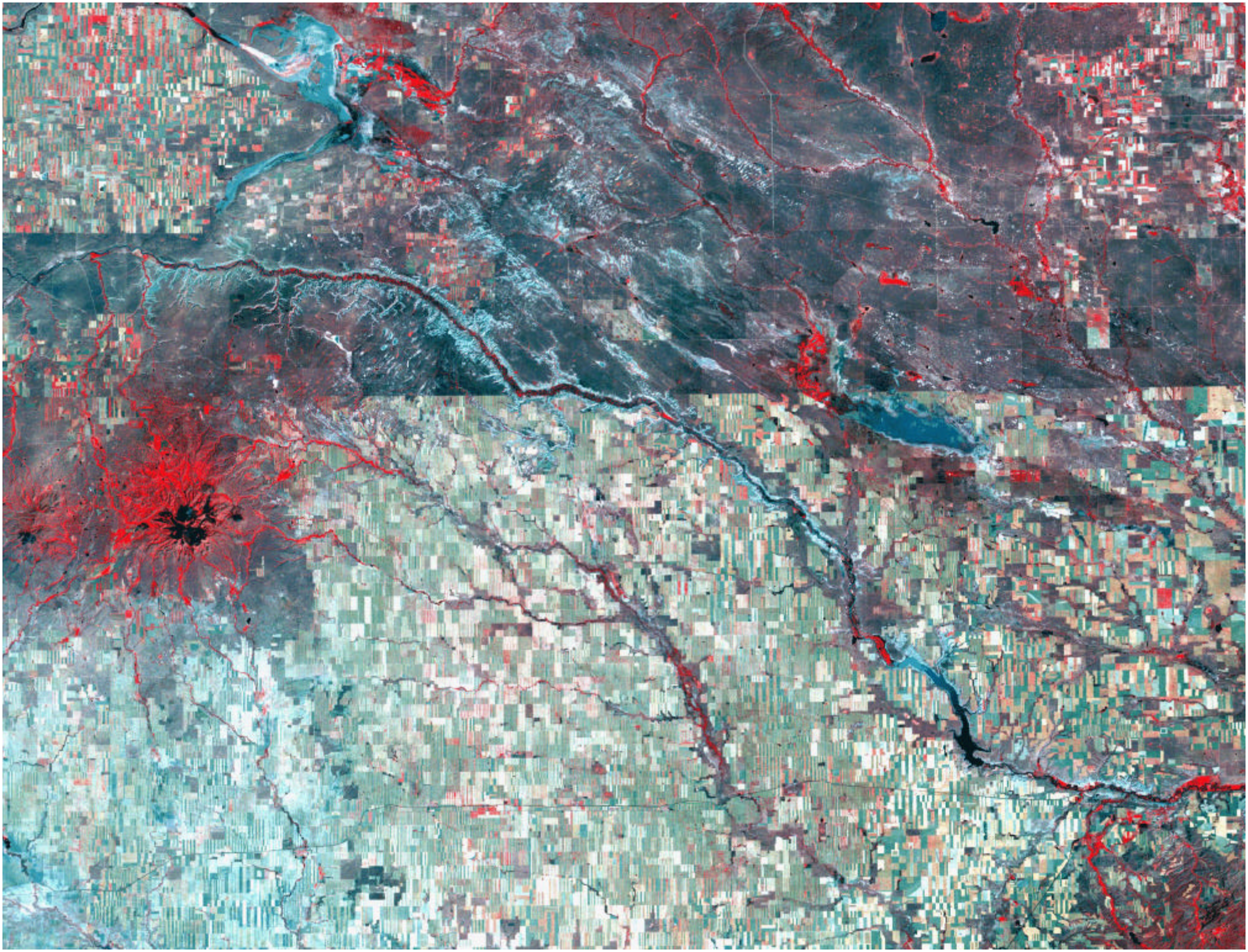
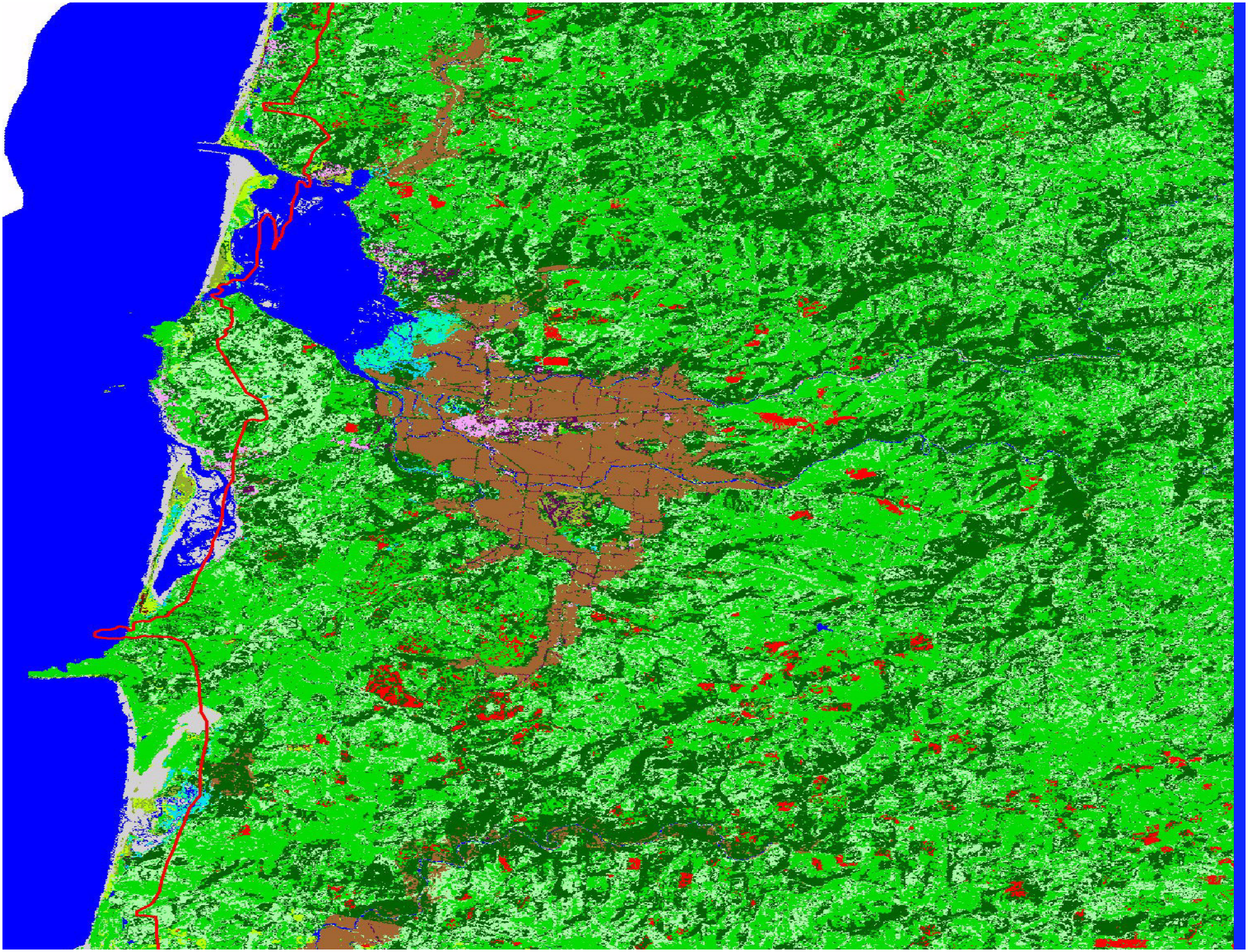
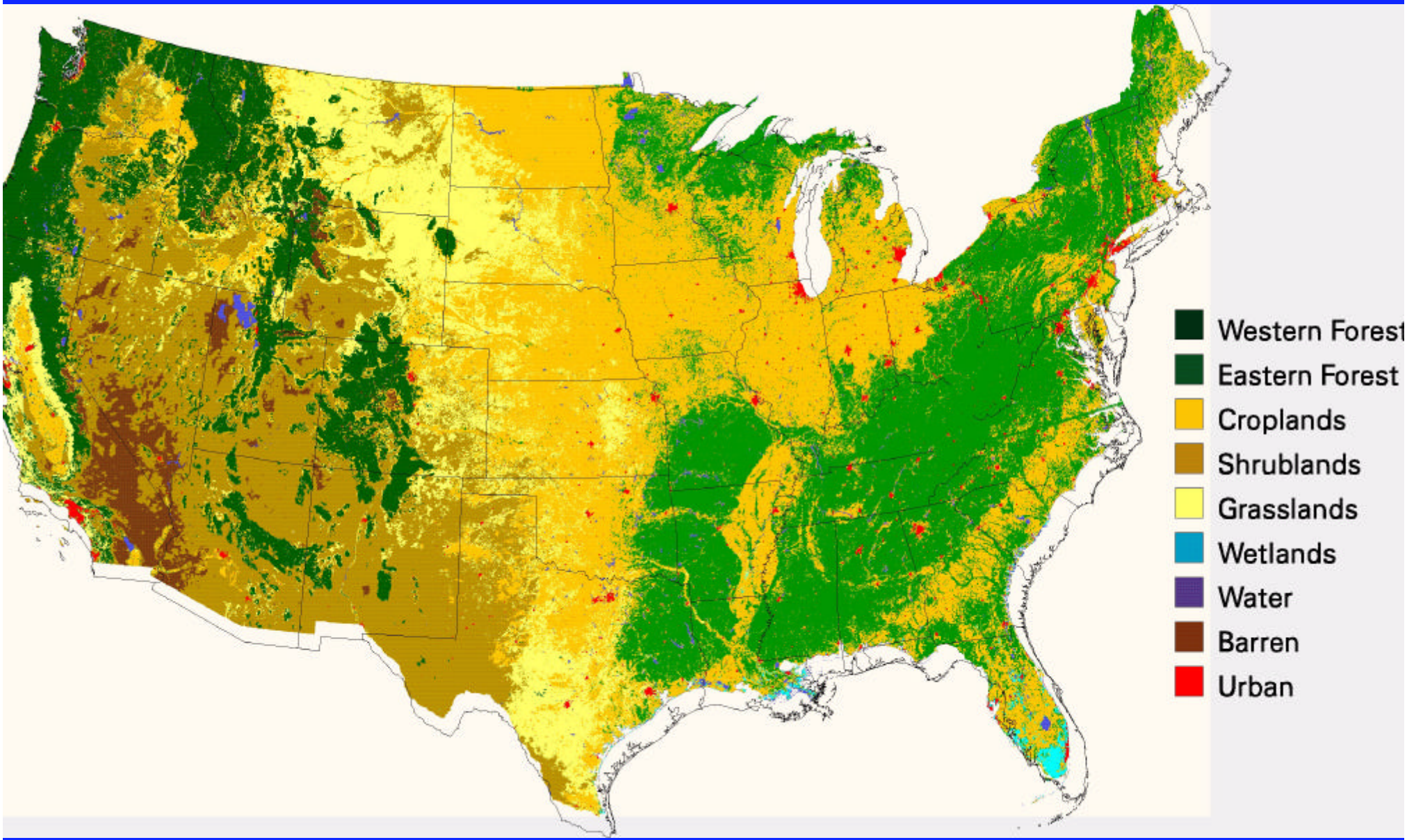
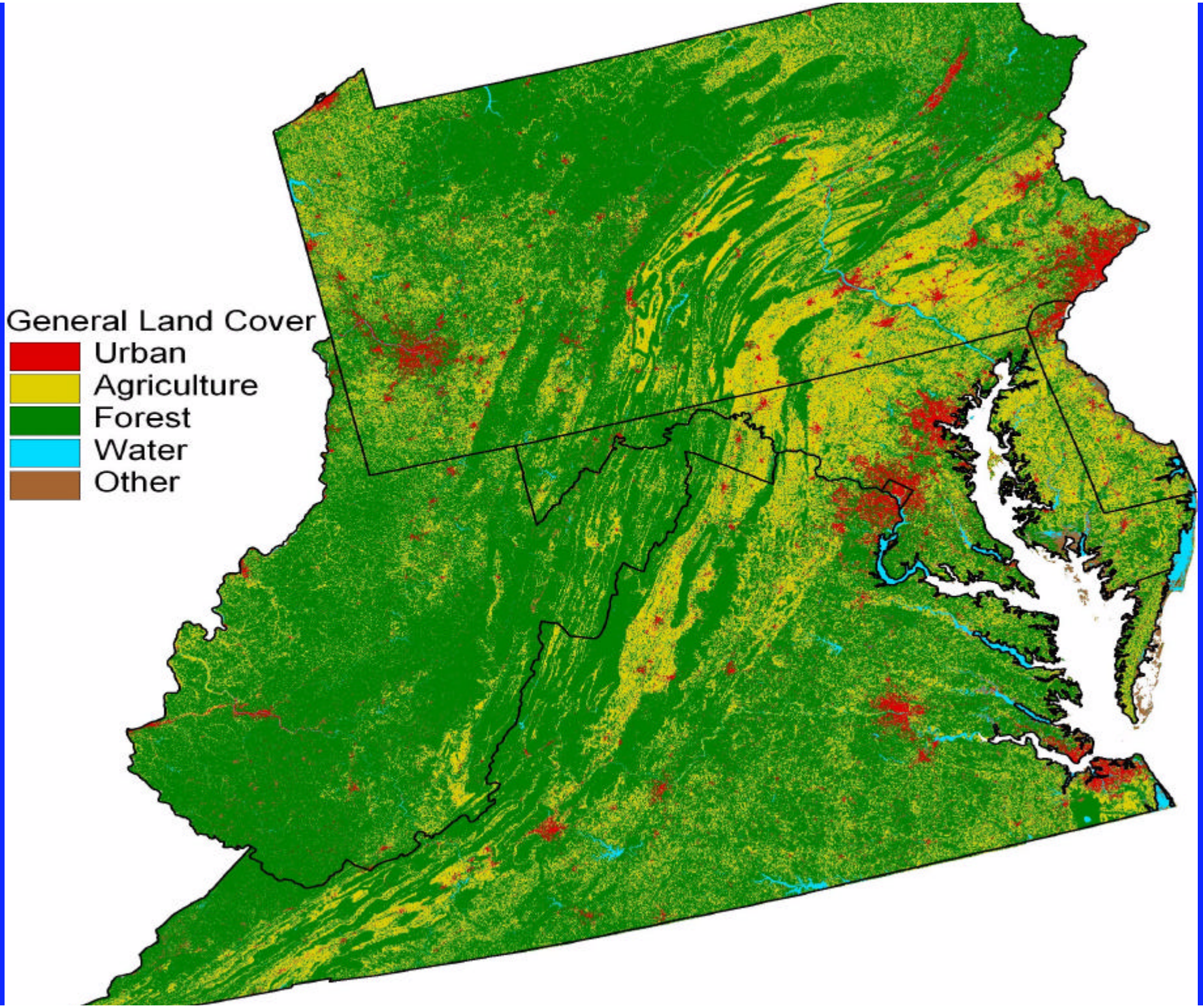


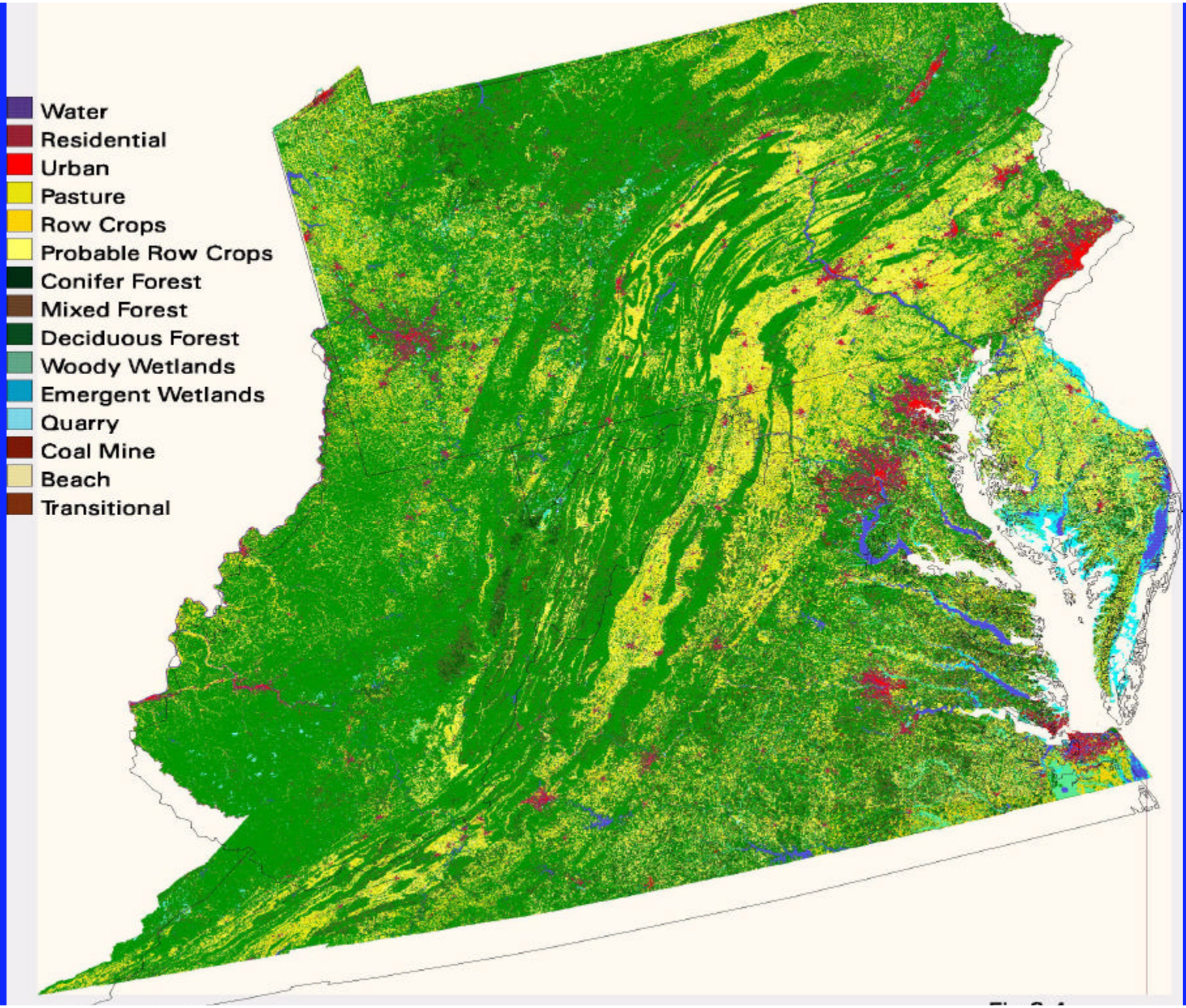
PLATE 58b (1962). Near St. David.






Western Forest
Eastern Forest
Croplands
Shrublands
Grasslands
Wetlands
Water
Barren
Urban


General Land Cover
Urban
Agriculture
Forest
Water
Other


Water
Residential
Urban
Pasture
Row Crops
Probable Row Crops
Conifer Forest
Mixed Forest
Deciduous Forest
Woody Wetlands
Emergent Wetlands
Quarry
Coal Mine
Beach
Transitional

Fundamental Issues (continued)

How good is it?

Does the text clearly identify:

at what scale or resolution the output applies?

the nature and level of uncertainty associated with the output as well as the data driving it?

You must have access to the metadata file!

If it's "caveat empty," then *caveat emptor*